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Williams et al.

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(54) **LOUNGE CHAIR**

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(51) **Int. Cl.**

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A47C 3/025	(2006.01)
A47C 3/12	(2006.01)
A47C 5/12	(2006.01)
A47C 3/18	(2006.01)
A47C 7/44	(2006.01)

(52) **U.S. Cl.**

CPC ***A47C 3/12*** (2013.01); ***A47C 3/18*** (2013.01); ***A47C 7/443*** (2013.01)

(58) **Field of Classification Search**

CPC .. A47C 3/18; A47C 3/12; A47C 7/185; A47C 5/12

USPC 297/344.21, 344.22, 344.24, 314, 440.1, 297/440.22, 451.13, 264.1, 270.1, 270.5

See application file for complete search history.

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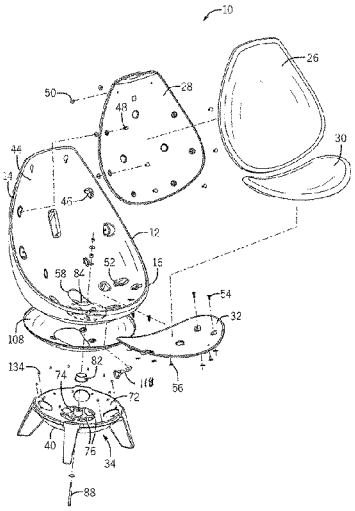
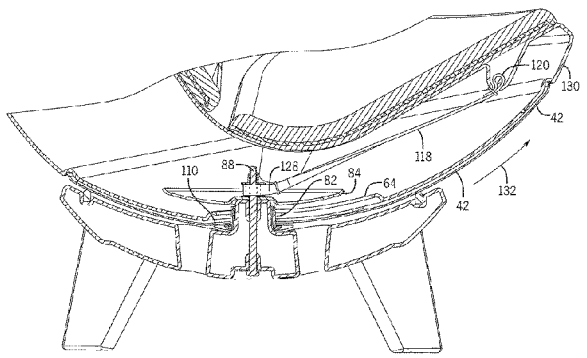
(57) **ABSTRACT**

A lounge chair having a seat shell that defines a chair back and a seat is pivotally movable about a stationary base. The stationary base includes a concave support surface having a shape that generally corresponds with a convex outer surface of the seat shell. A swivel disc is positioned between the seat shell and the base to allow the seat shell to pivot about the stationary base. The interaction between a pivot post formed on the base and a pivot limiting guide formed in the seat shell defines the range of movement for the seat shell. A bias member connects the seat shell to the seat base and creates a bias force to urge the seat shell into an upright seating position. The base includes a series of glide buttons that support the swivel disc to allow the seat shell to pivot relative to the stationary base.

19 Claims, 12 Drawing Sheets





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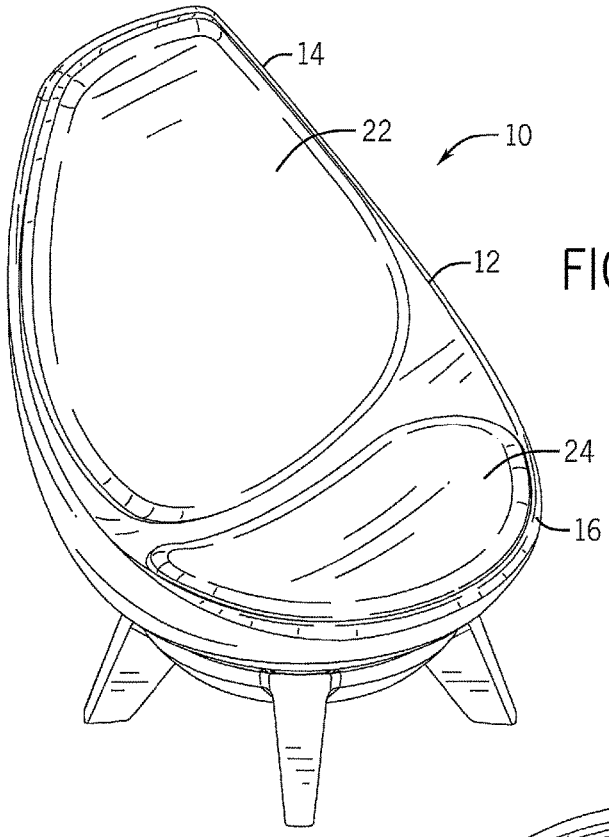


FIG. 1

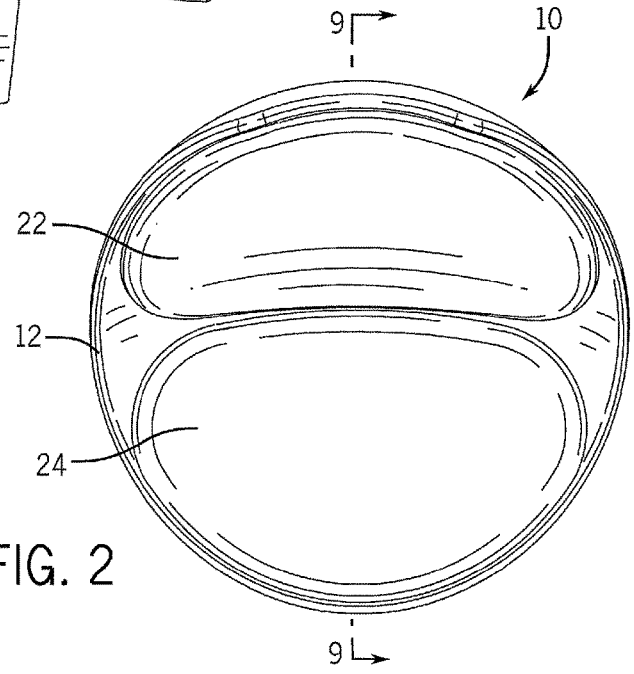


FIG. 2

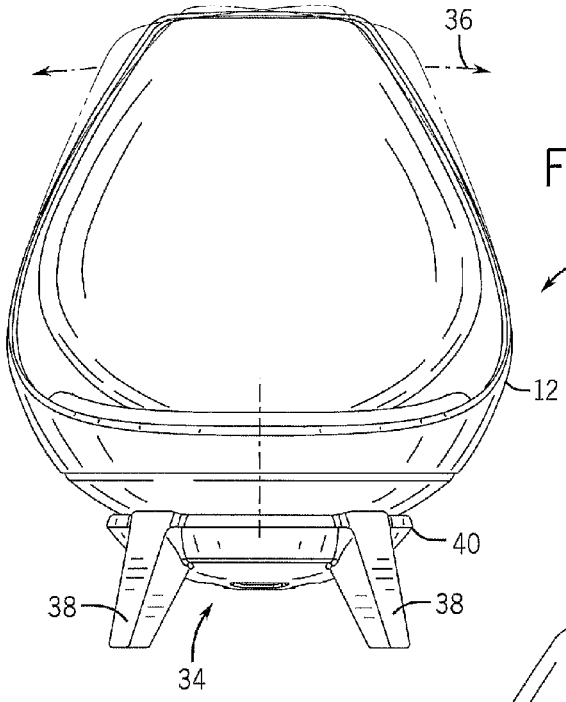


FIG. 3

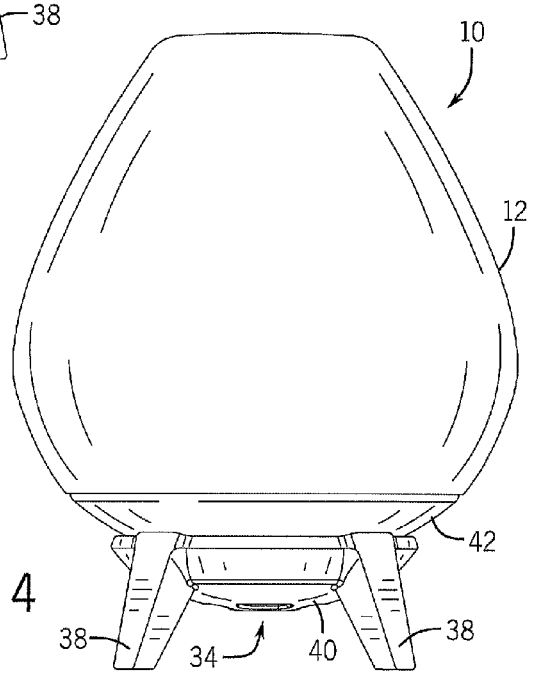


FIG. 4

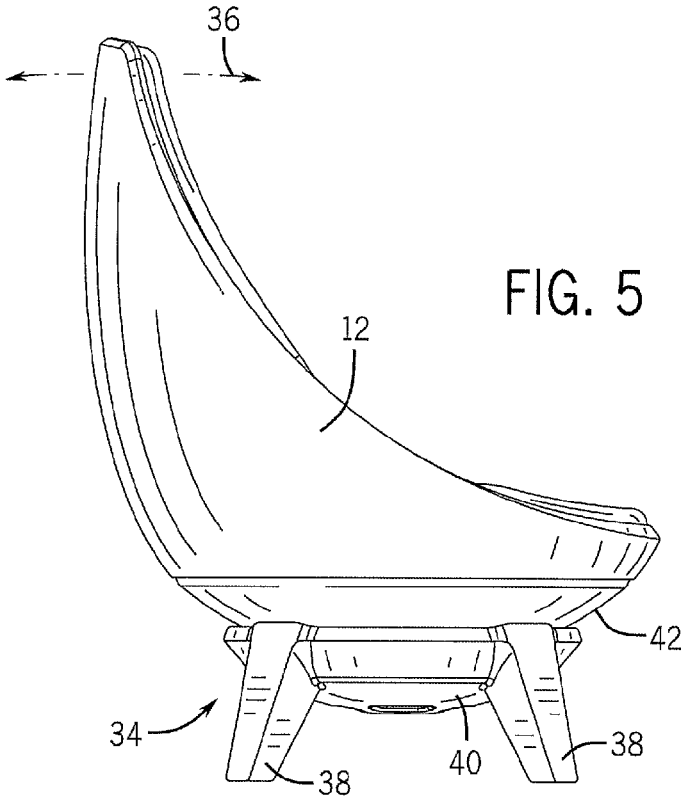


FIG. 5

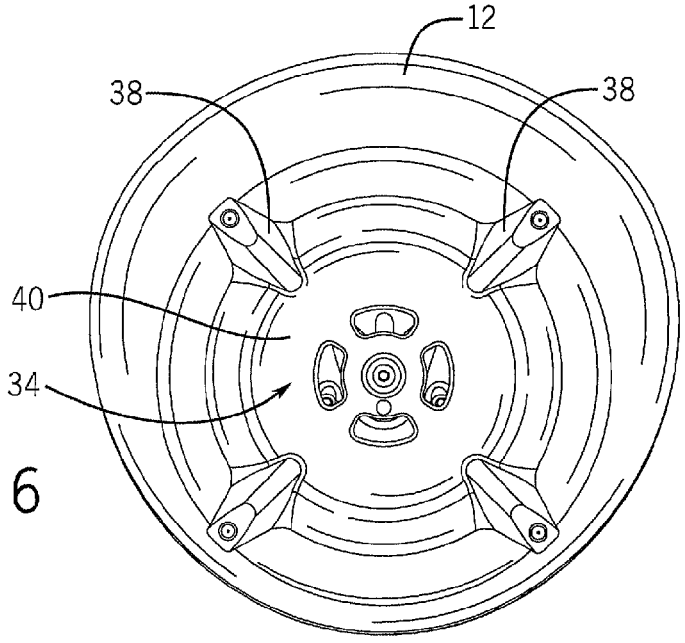
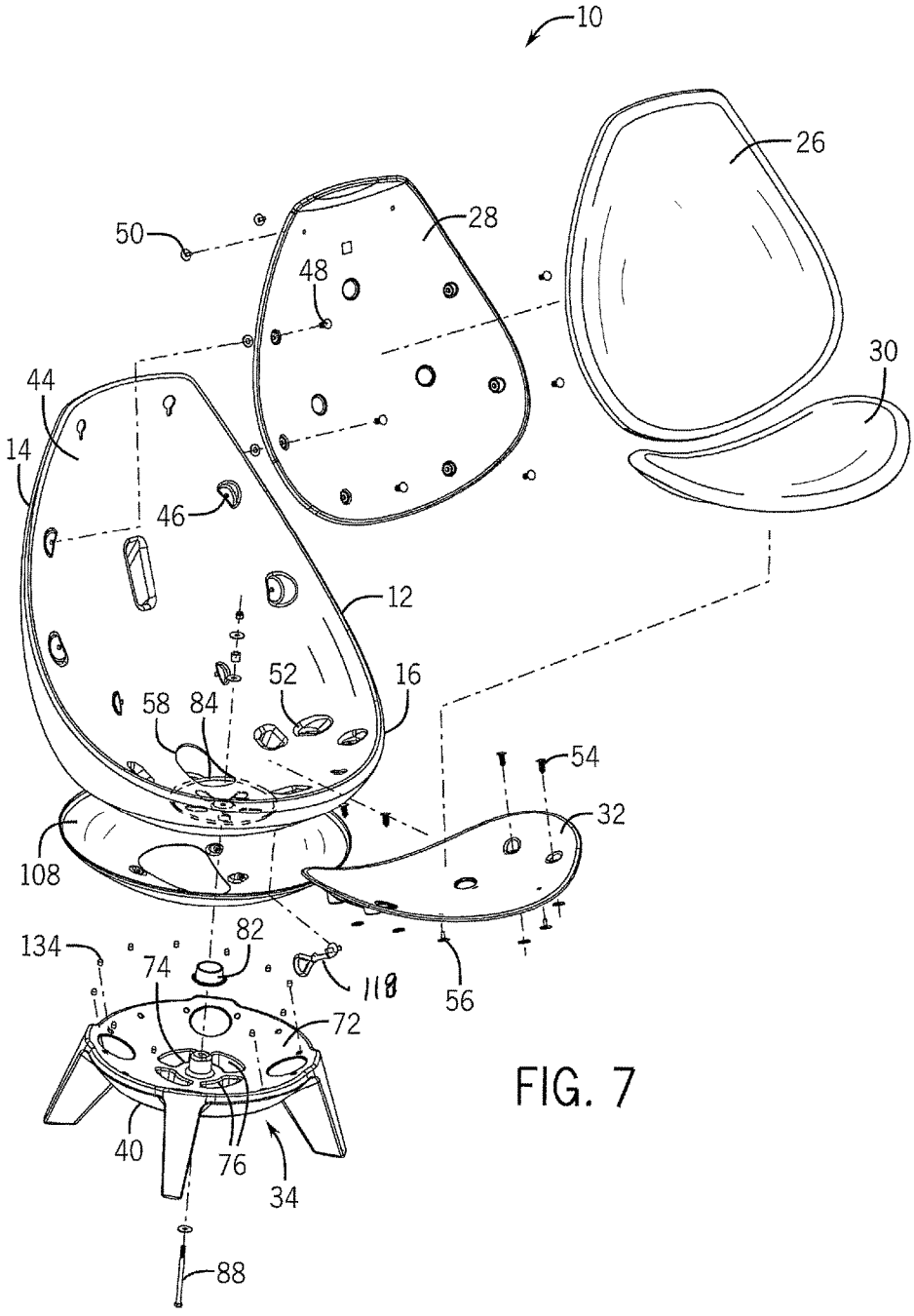


FIG. 6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76
34
88

FIG. 7

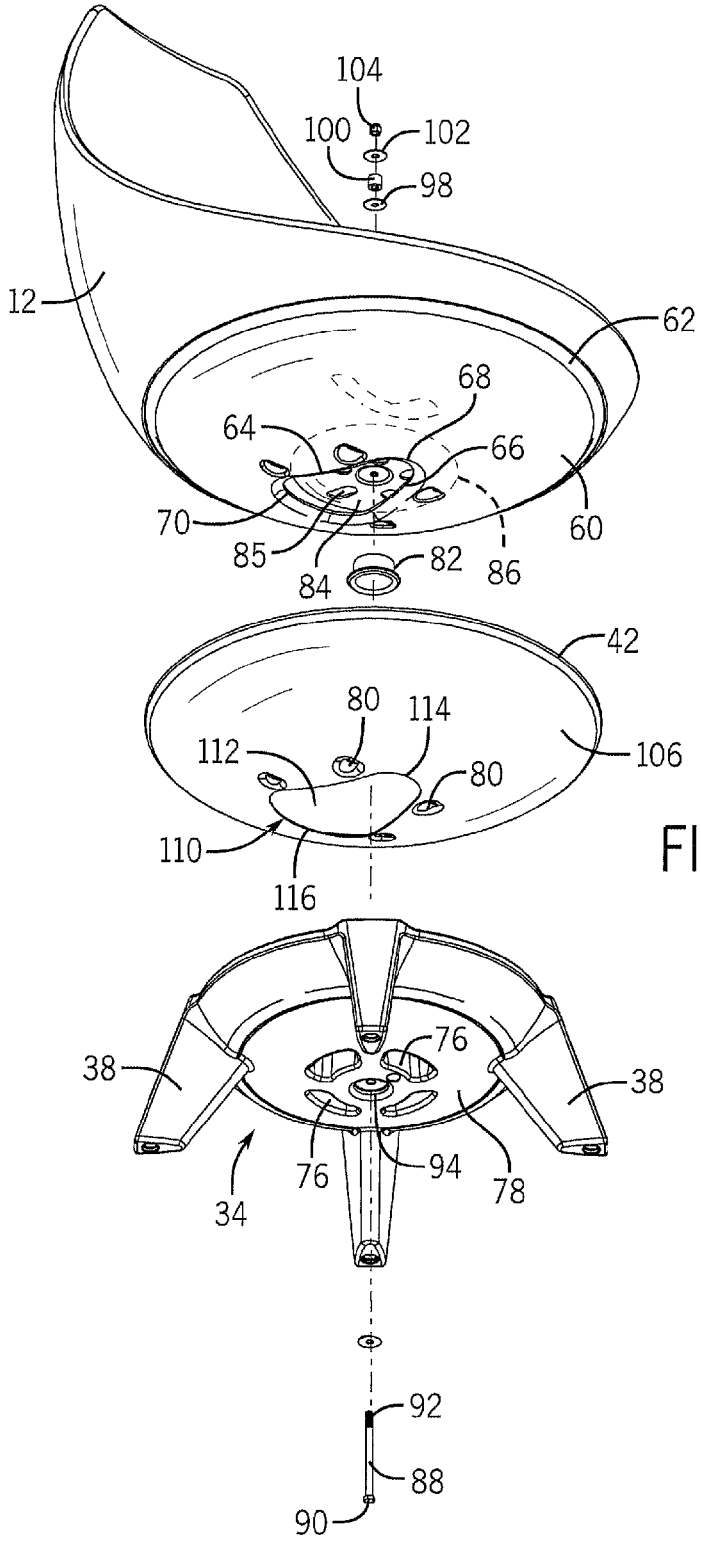
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FIG. 8

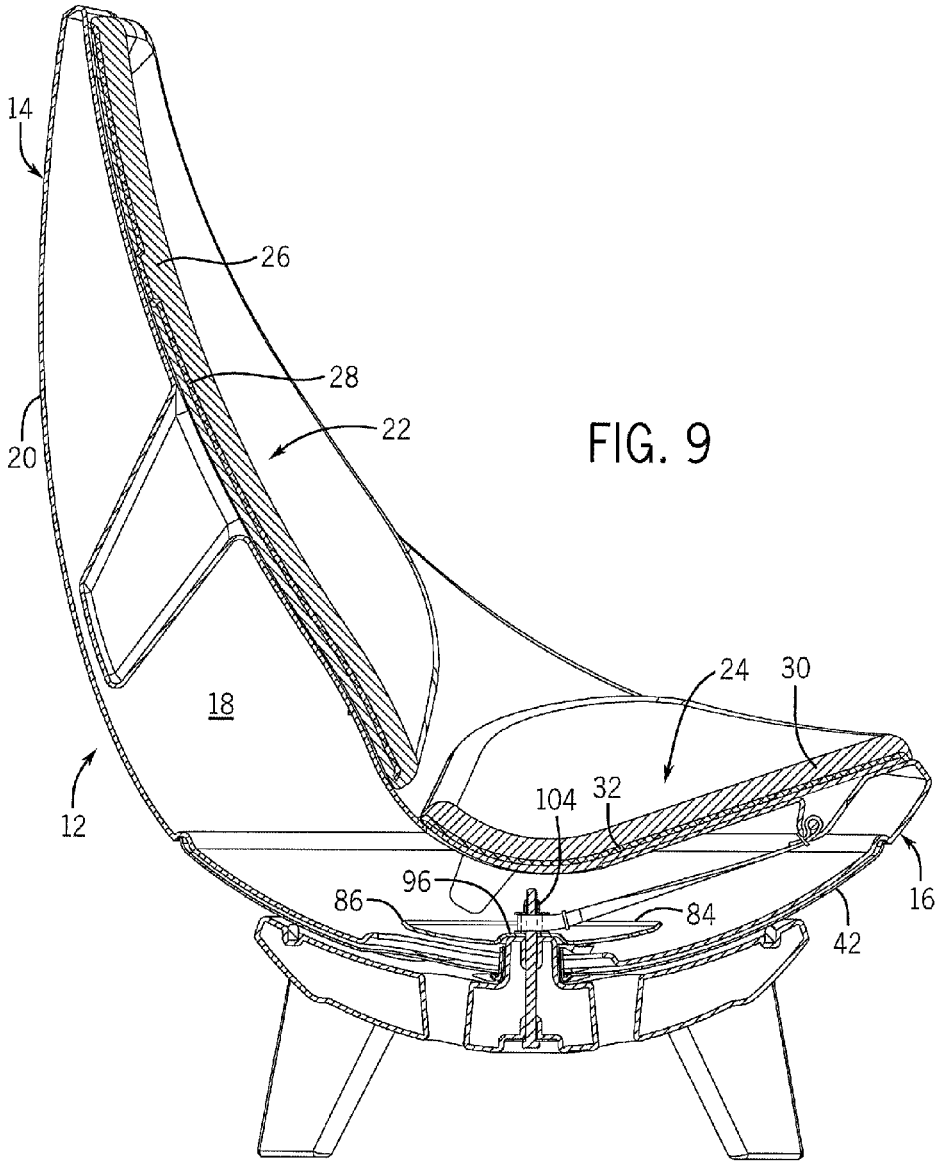

FIG. 9

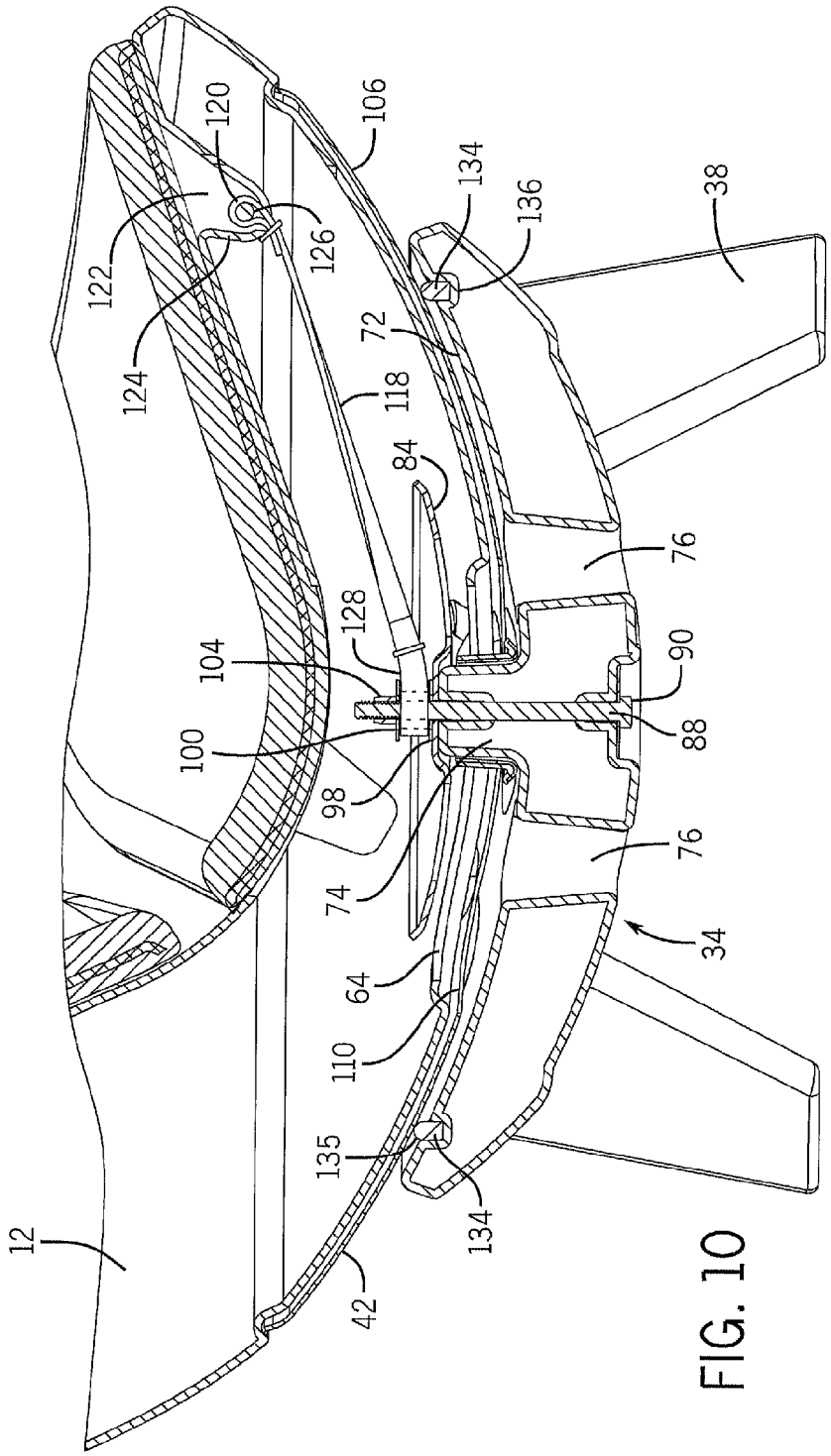
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FIG. 10

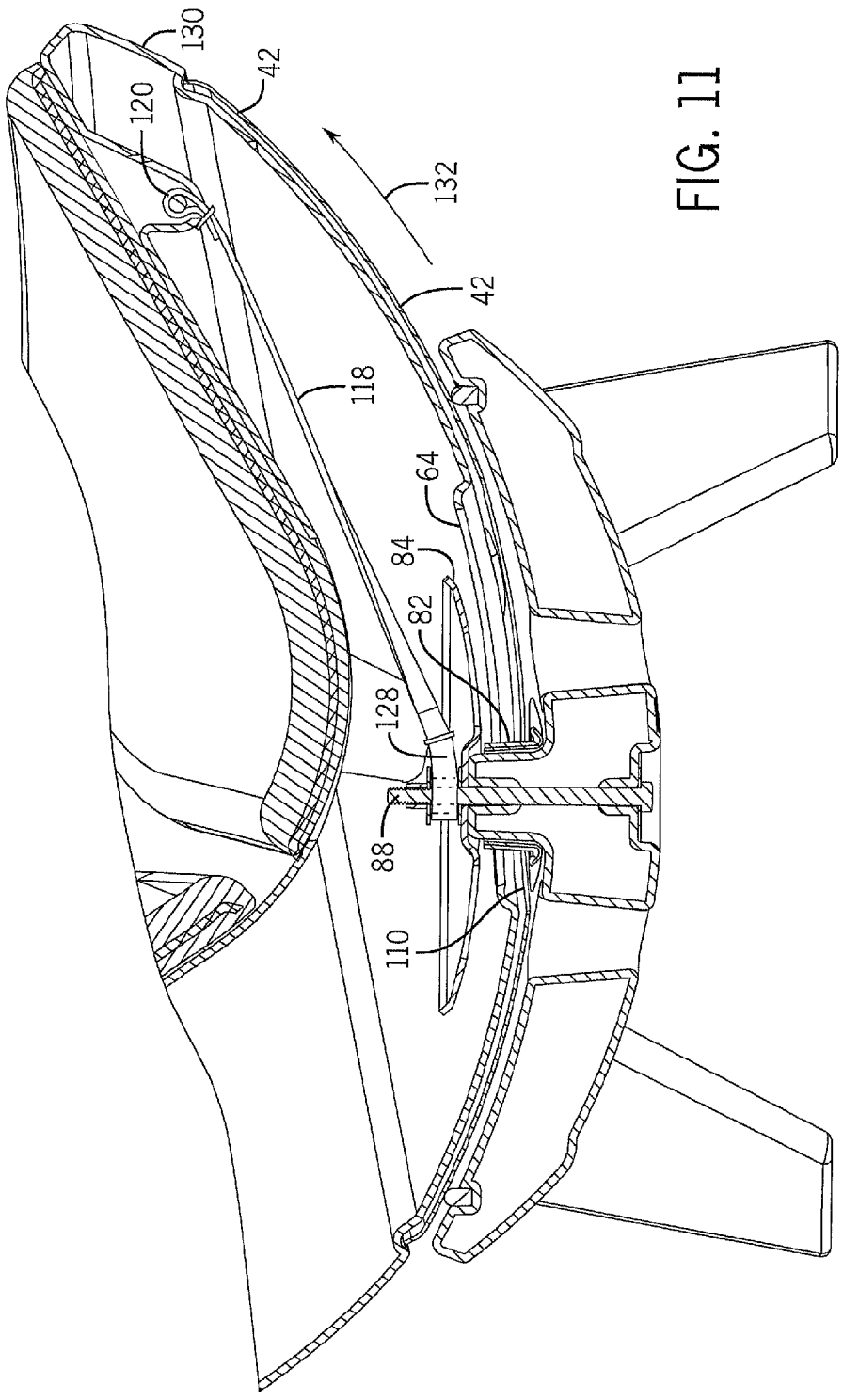

FIG. 11

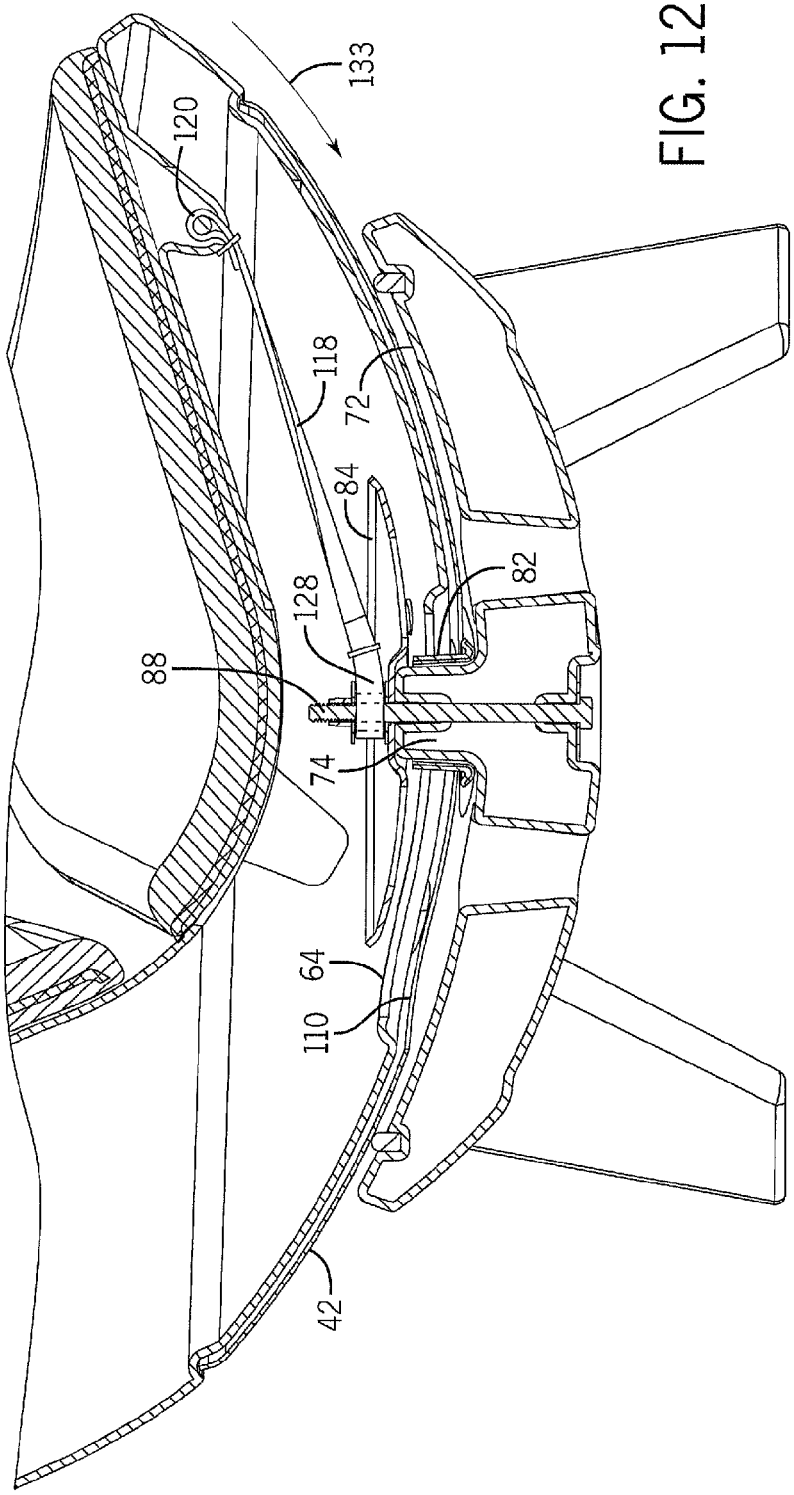

FIG. 12

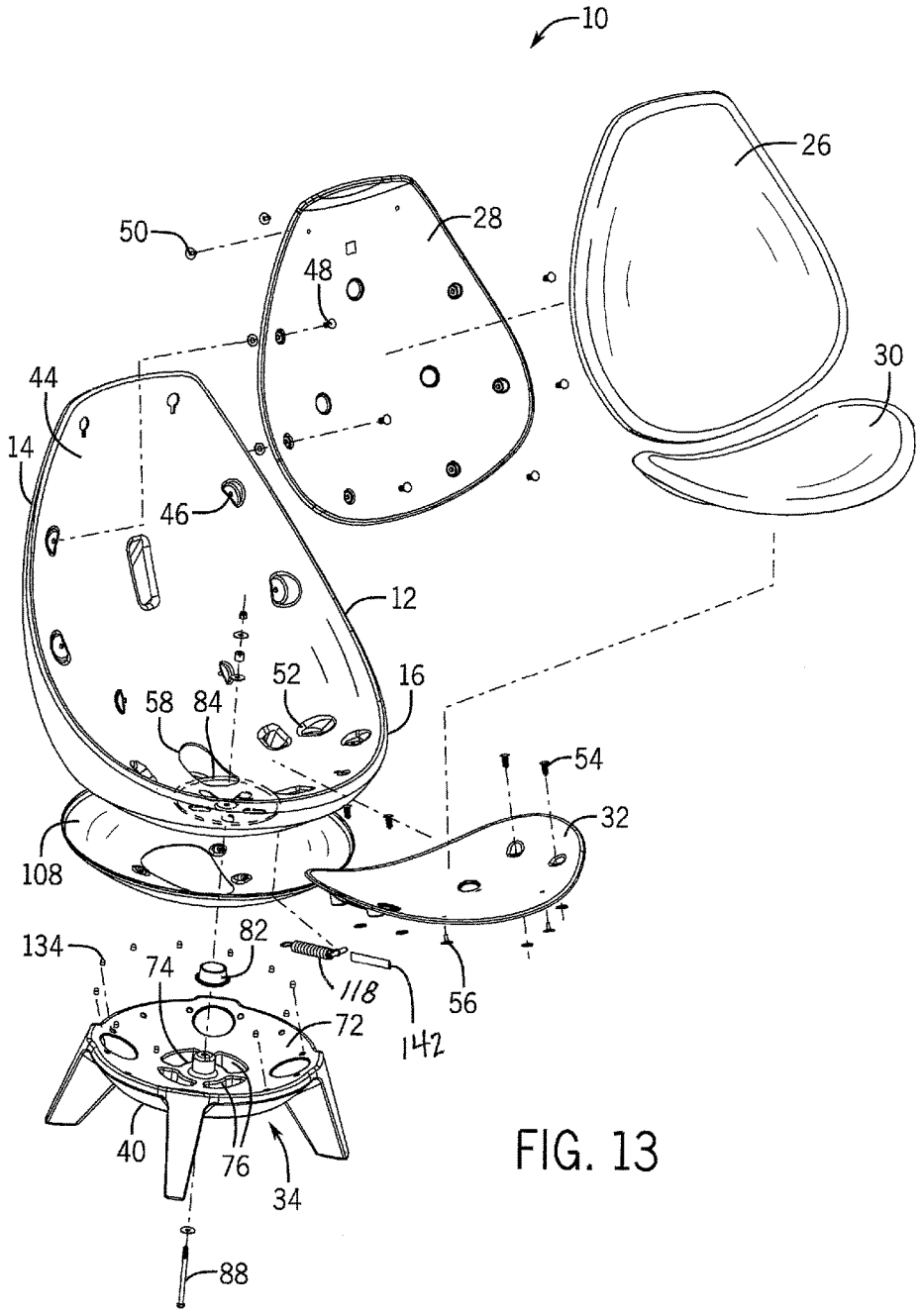
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FIG. 13

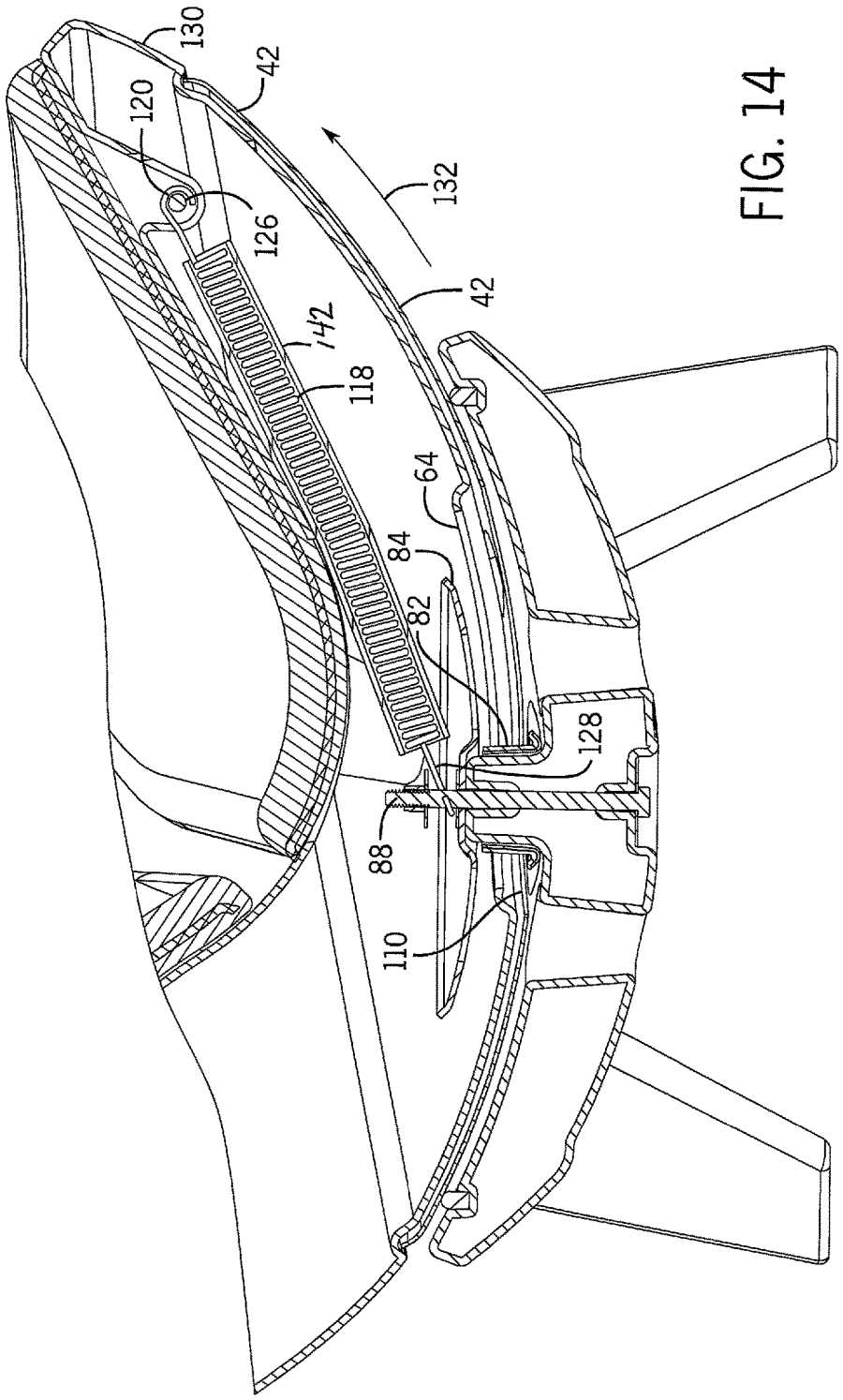

FIG. 14

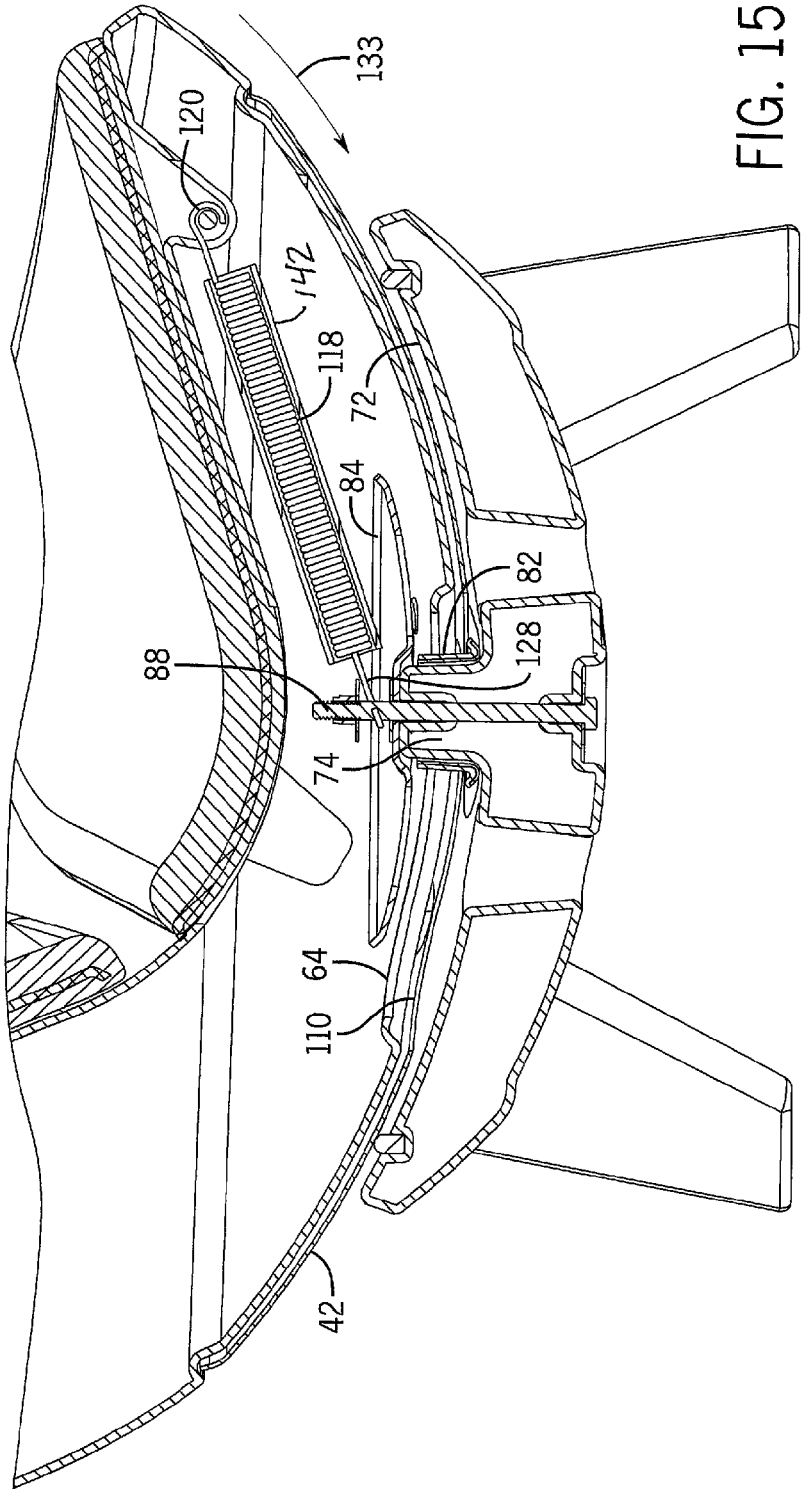

FIG. 15

LOUNGE CHAIR

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. application Ser. No. 14/661,176, filed Mar. 18, 2015, which issued as U.S. Pat. No. 9,398,881 on Jul. 26, 2016, the disclosure of which is incorporated by reference.

BACKGROUND

The present disclosure generally relates to a lounge chair. More specifically, the present disclosure relates to a lounge chair that includes a seat shell that is pivotally mounted to a stationary base.

Presently, many different types of lounge chairs are available that allow a seat occupant to be comfortably seated. In many of these currently available lounge chairs, a mechanism is included in the chair to allow the chair to recline to increase the comfort of the seat occupant. Although different types of pivoting mechanisms are utilized in these types of chairs, many of these mechanisms are complicated, expensive and difficult to manufacture and assemble. Therefore, a need exists for a lounge chair that allows a seat occupant to recline while providing for ease of manufacture, ease of assembly and a desirable visual appearance.

SUMMARY

The present disclosure relates to a lounge chair. More specifically, the present disclosure relates to a lounge chair having a desirable appearance and a seat shell that is pivotally movable relative to a stationary base.

The seat shell of the lounge chair is formed from a molded plastic material and includes a generally open, hollow interior. The seat shell defines an integrally formed seat and chair back to support a seat occupant during use. Both the seat and chair back include a cushion that is mounted to an inner surface of the seat shell.

The bottom portion of the seat shell includes a convex bottom contact surface. The convex bottom contact surface defines a pivot surface for the pivoting movement of the seat shell relative to the stationary base.

The lounge chair includes a stationary base that includes a plurality of support legs that support a center section. The center section of the base includes a concave support surface. The concave support surface has a shape that generally corresponds to the convex bottom contact surface of the seat shell. The base is formed with a pivot post that extends from the support surface of the base and into the hollow interior of the seat shell when the seat shell is received on the base. A retaining disc is positioned within the open interior of the seat shell to hold the seat shell and base together while allowing movement of the seat shell relative to the stationary base.

The lounge chair further includes a swivel disc that is positioned between the contact surface of the seat shell and the support surface of the base. The swivel disc is formed from a material that is more durable than the material that forms the seat shell. In one embodiment, the swivel disc is formed from a polycarbonate material. The swivel disc is attached to the bottom portion of the seat shell and covers the entire convex bottom contact surface of the seat shell.

The seat shell includes a pivot limiting guide that interacts with the pivot post to limit the pivoting movement of the seat shell relative to the base. The pivot limiting guide is formed by a pivot limiting opening defined by a guide edge surface that contacts the pivot post to restrict the pivoting movement of the seat shell relative to the stationary base. The shape of the guide edge surface defines the extent of pivoting movement of the seat shell.

In one embodiment of the disclosure, the lounge chair further includes a bias member that is connected between the seat shell and the base when the seat shell is mounted to the base. The bias member is formed from a resilient material and creates a bias force that urges the seat shell into an upright, seating position. During the reclining movement of the seat shell relative to the seat base, the bias member further stretched to resist the reclining movement. When the seat occupant leaves the chair, the bias force created by the bias member returns the seat shell to the upright, seating position.

Various other features, objects and advantages of the invention will be made apparent from the following description taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate the best mode presently contemplated of carrying out the disclosure. In the drawings:

FIG. **1** is an isometric view of the lounge chair of the present disclosure;

FIG. **2** is a top plan view of the lounge chair;

FIG. **3** is a front view of the lounge chair;

FIG. **4** is a back view of the lounge chair;

FIG. **5** is a right side view of the lounge chair;

FIG. **6** is a bottom plan view of lounge chair;

FIG. **7** is an exploded, isometric view of the lounge chair in an embodiment having a tether as the bias member;

FIG. **8** is an exploded, bottom view of the lounge chair of FIG. **7**;

FIG. **9** is a section view taken along **9-9** of FIG. **2** for the lounge chair of FIG. **7**;

FIG. **10** is a magnified, partial section view taken from FIG. **9**;

FIG. **11** is a magnified, partial section view similar to FIG. **10** showing the pivoting movement of the lounge chair of FIG. **7**;

FIG. **12** is a partial section view of the lounge chair of FIG. **7** similar to FIG. **11** showing pivotal movement in an opposite direction;

FIG. **13** is an exploded, isometric view similar to FIG. **7** of an embodiment having a spring as the bias member;

FIG. **14** is a magnified, partial section view of the lounge chair of FIG. **13** similar to FIG. **11**; and

FIG. **15** is a magnified, partial view of the lounge chair of FIG. **13** similar to FIG. **12**.

DETAILED DESCRIPTION

FIGS. **1-6** illustrate a lounge chair **10** constructed in accordance with the present disclosure. The lounge chair **10** has a unique, egg-shape, although other shapes are contemplated. The lounge chair **10** includes a seat shell **12** that define a chair back **14** and a seat **16**. As can be understood in the section view of FIG. **9**, the seat shell **12**, which defines the chair back **14** and the seat **16**, includes a hollow, open interior **18** that is defined by an outer wall **20**. In the embodiment illustrated, the seat shell **12** is formed from rotomolded low density polyethylene (LDPE) such that the chair back **14** and seat **16** are formed as a unitary, hollow member including the open interior **18**.

As illustrated in FIGS. **1** and **9**, the chair back **14** includes a back cushion **22** while the seat **16** includes a seat cushion **24**. Both the back cushion **22** and the seat cushion can include upholstery to provide a visually desirable appearance. The back cushion **22** includes a foam pad **26** mounted to and supported by a shell **28**. The shell **28**, in the embodiment illustrated, is formed from polyolefin regrind and provides a stiff, support section for the foam polyurethane pad **26**. The seat cushion **24** includes a similar foam pad **30** mounted to a shell **32** formed from the same polyolefin regrind.

Referring back to FIGS. **3-4**, the lounge chair **10** further includes a base **34** that supports the seat shell **12**. The seat shell **12** and base **34** interact with each other to allow pivoting movement of the seat shell **12** relative to the base **34**, as shown by arrows **36** in FIGS. **3** and **5**. The base **34** includes a plurality of support legs **38** that each extend from a center section **40** to provide stable support for the base on a support surface, such as a floor.

As can be seen in FIGS. **4** and **5**, a swivel disc **42** is positioned between the seat shell **12** and the base **34**. The swivel disc **42** is securely attached to the bottom portion of the seat shell **12** and provides a support surface for the pivoting movement of the seat shell **12** relative to the base **34**. In the embodiment illustrated, the swivel disc **42** is formed from a polycarbonate material that is more durable, stronger and more structurally stable than the LDPE that forms the seat shell **16**. However, it is contemplated that the swivel disc **42** could be formed from other materials while operating within the scope of the present disclosure.

FIGS. **7-8** are each exploded views of the lounge chair **10** of the present disclosure. As shown in FIG. **7**, the seat shell **12** includes a generally smooth, inner surface **44** that defines a portion of the seat **16** and the chair back **14**. The inner surface **44** includes a plurality of openings **46** that each receives one of a plurality of connectors **48** that attach the shell **28** of the back cushion to the seat shell. A second group of connectors **50** attach the foam pad **26** of the back cushion to the seat shell **28**.

Another group of openings **52** formed in the inner surface **44** receive a group of connectors **54** that connect the shell **32** of the seat cushion to the inner surface **44**. Connectors **56** attach the foam pad **30** to the shell **32**.

The inner surface **44** further includes a drain opening **58** positioned in the seat area **16**. The drain opening **58** allows for drainage of liquid that may be spilled by a seat occupant when seated in the lounge chair.

As illustrated in FIG. **8**, the seat shell **12** includes a convex bottom contact surface **60**. The convex bottom contact surface **60** is positioned beneath the seat portion of the seat shell **12** and is defined at its outer edges by an attachment lip **62**. The convex bottom contact surface **60** includes a pivot limiting guide that in the embodiment shown is a pivot limiting opening **64** that is a removed area defined by a guide edge surface **66**. The guide edge surface **66** defines a curved front portion **68** and a curved back portion **70**. The curved back portion **70** has a width greater than the curved front portion **68**.

Referring now to FIG. **7**, the center section **40** of the base **34** includes a concave support surface **72**. The shape of the concave support surface **72** generally corresponds to the curvature of the convex contact surface **60** formed on the seat shell **12**. The shape of the convex contact surface **60** formed on the seat shell and the concave support surface **72** formed on the base **34** allows the seat shell **12** to pivot relative to the base **34**.

The center section **40** includes a pivot post **74** that is integrally molded with the center section **40** and is positioned generally at the center of the support surface **72** and extends from the support surface **72**. The pivot post **74** is surrounded by a series of openings **76** that extend through the center section from the support surface **72** to a bottom surface **78**, as shown in FIG. **8**. The openings **76** function as drain holes or openings that allow spilled liquid to pass through the center section **40** and also reduce the weight of the base **34**.

Referring back to FIG. **7**, a bumper **82** surrounds the pivot post **74**. The bumper **82** is formed from a wear resistant material that protects the pivot post **74** during the pivoting movement of the seat shell relative to the base.

Referring now to FIG. **8**, a retainer plate **84** is positioned within the open interior defined by the seat shell **12**. The retainer plate **84** has an outer diameter defined by an outer edge **86** which is larger than the pivot opening **64**. In this manner, the retainer plate **84** is entrapped within the open interior **18** of the seat shell **12**, as is best illustrated in FIG. **9**. The retainer plate **84** prevents the seat shell **16** from being separated from the base **34** while allowing for pivoting movement between the components. The retainer plate **84** includes a series of spaced drain openings **85** that allow spilled liquids to pass through the retainer plate **84**.

As can be understood in FIGS. **8** and **9**, a bolt **88**, having a head portion **90** and a threaded shaft portion **92**, extends through a center opening **94** and through the pivot post **74**. The bolt **88** enters into the seat shell as shown in FIG. **9** and passes through a center portion **96** of the retainer plate **84**. As can be understood in FIG. **8**, a lower washer **98**, bushing **100**, upper washer **102** and attachment nut **104** are received on the threaded portion of the bolt **88**. The combination of these components connects the retainer ring to the pivot post **74**.

As discussed previously, the swivel disc **42** is securely attached to the convex contact surface **60** of the seat shell **16** along the attachment lip **62**. The swivel disc **42** includes a curved outer surface **106** as well as a curved inner surface **108**, which is best shown in FIG. **7**. The swivel disc **42** is preferably formed from steel to provide the required strength, durability and stability for the continued pivoting movement of the seat shell relative to the stationary base. The swivel disc **42** could be formed from other materials, such as polycarbonate, while operating within the scope of the present disclosure. The radius of curvature of the outer surface **106** generally corresponds to the curvature of the support surface **72** of the base **34** while the curvature of the inner surface **108** generally corresponds to the curvature of the contact surface **60** of the seat shell **12**.

In the embodiment shown in FIG. **8**, the swivel disc **42** includes a pivot opening **110**. The pivot opening **110** is a removed portion of the swivel disc **42** that extends through the pivot disc from the outer surface **106** to the inner surface **108**. The pivot opening **110** is defined by an outer edge **112**. The outer edge **112** defines a front portion **114** and a rear portion **116**. The width of the rear portion **116** is greater than the width of the front portion **114**.

As can be understood in FIG. **8**, the shape of the pivot limiting opening **64** formed in the contact surface **60** of the seat shell **12** defines a pivot limiting guide that limits the pivoting movement of the seat shell **12** relative to the base **34**. The pivot opening **110** formed in the swivel disc **42** is slightly larger and generally corresponds to the shape of the pivot limiting opening **64** formed in the contact surface **60** of the seat shell **12**. The size of the pivot opening **110** allows the bumper and pivot post to freely move relative to the

swivel disc **42** such that the pivot limiting guide formed on the seat shell limits the movement of the seat shell **12**.

As illustrated in FIG. **10**, the base **34** includes a plurality of glide buttons **134** that are each received within a mounting hole **136** that extends into the base from the support surface **72**. Each of the glide buttons **134** are formed from a wear resistant material, such as UHMW polyethylene. As can be seen in FIG. **10**, each of the glide buttons include a curved, upper surface **135** that contacts the outer surface **106** of the swivel disc **42** and generally spaces the outer surface **106** from the support surface **72** of the base **34**. The glide buttons **134** allow the swivel disc **42** to move relative to the base and create a wear surface that could be replaced when worn. As can be seen in FIG. **7**, the plurality of glide buttons **134** are spaced around the outer circumference of the center section **40** to provide spaced support for the seat shell and the associated swivel disc **42**.

Referring now to FIG. **10**, the lounge chair includes a bias member **118** that is designed to create a bias force to urge the seat shell **12** into an upright, resting position. The bias member **118** is depicted as a tether in FIGS. **7-12** and as a spring in FIGS. **13-15**. It should be recognized that other types of bias members, as well as a combination of those disclosed, are contemplated in the present disclosure. In embodiments having a tether as the bias member **118**, the bias member **118** is preferably formed from a resilient material, such as rubber. A first end **120** of the bias member **118** is securely retained within an attachment opening **122** formed in a recessed portion **124** of the seat shell. In the embodiment shown in FIG. **10**, an attachment rod **126** holds the first end **120** within the attachment opening **122**.

A second end **128** of the bias member **118** is securely attached to the bolt **88** that extends through the pivot post **74**. The second end **128** of the bias member **118** is coupled to the bushing located between the upper and lower washers **98**, **100** and is held in such a position by the nut **104**. In this manner, the bias member **118** has a first end **120** connected to the seat shell **12** and a second end **128** connected to the pivot post **74** of the base **34**.

Referring now to FIG. **11**, when a user is seated in the lounge chair, the user can lean back, which causes the chair back to recline, thus causing the front portion **130** of the seat shell to move in the direction illustrated by arrow **132**. During this pivoting movement, the length of the bias member **118** is increased. At the same time, the bumper **82** travels within the pivot limiting opening **64** formed in the contact surface of the seat shell. The seat occupant is able to recline until the bumper **82** contacts the guide edge surface that defines the pivot limiting opening **64**. At this position, generally shown in FIG. **11**, the reclining movement of the seat shell is halted.

If the seat occupant wishes to return to a more upright position, as shown by arrow **133** in FIG. **12**, the user leans forward, which causes the bumper **82** surrounding the pivot post **74** to move within the pivot limiting opening **64** toward the front portion of the pivot limiting opening. The movement of the seat shell relative to the base is aided by the bias force created by the bias member **118**. The fully upright position of the seat shell is defined by the shape and configuration of the pivot limiting opening **64**. In the fully upright position, the bias member **118** is slightly extend from a relaxed condition such that the bias member **118** holds the seat shell in the upright position and holds the bumper **82** against the guide edge of the pivot limiting opening in the seat shell.

Although the pivot limiting guide is shown and described as being the pivot limiting opening **64** formed in the seat shell, it is contemplated that the pivot limiting guide could alternatively be formed on the swivel disc **42**. In such an embodiment, the pivot opening **110** would be properly sized to contact the bumper **82** to limit the pivoting movement of the seat shell relative to the base. In such an embodiment, size of the pivot limiting opening **64** in the seat shell would be increased such that only the pivot opening **110** in the swivel disc would contact the bumper **82**.

FIGS. **13-15** depict a lounge chair **10** similar to that shown in FIGS. **7-12**, but having a spring as the bias member **118**. In embodiments having a spring as the bias member **118**, the bias member **118** is preferably formed of coiled spring steel and is preferably enclosed along the sides of its length by a cylindrical sleeve **142**, as shown in FIGS. **14-15**. As illustrated in FIGS. **14** and **15**, the spring includes the first end **120** that is securely retained within the attachment opening formed in the recessed portion of the seat shell. In the embodiment shown in FIG. **14**, the attachment rod **126** holds the first end **120** within the attachment opening.

A second end **128** of the spring is securely attached to the bolt **88** that extends through the pivot post. The second end **128** of the spring is coupled to the bushing located between upper and lower washers **98**, **100** and is held in such a position by the nut **104**. In this manner, the spring **128** has a first end **120** connected to the seat shell and a second end **128** connected to the pivot post of the base, as in the embodiment previously described.

The movement of the lounge chair shown in FIGS. **13** and **14** is substantially the same as described in the embodiment of FIGS. **11** and **12**. It should be recognized that while the embodiments having a spring as the bias member **118** describe and depict using a coil spring, alternative forms of springs are readily recognizable in the art and contemplated as being within the scope of the present disclosure.

This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to make and use the invention. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

We claim:

1. A lounge chair, comprising:

a seat shell having a hollow interior, integrally formed seat and chair back and a convex bottom contact surface;

a base having a concave support surface that generally corresponds to the convex bottom contact surface of the seat shell;

a pivot post extending from the support surface of the base and into the hollow interior of the seat shell when the seat shell is received on the base;

a swivel disc positioned between the contact surface of the seat shell and the support surface of the base;

a pivot limiting guide that contacts the pivot post to limit the pivoting movement of the seat shell relative to the base; and

a bias member positioned between the seat shell and the base to bias the seat shell into a seating position.

2. The lounge chair of claim **1** wherein the bias member is a tether.

3. The lounge chair of claim 2 wherein the contact surface of the seat shell includes a pivot limiting opening defined by a guide edge surface that contacts the pivot post to form the pivot limiting guide.

4. The lounge chair of claim 1 wherein the bias member is a spring.

5. The lounge chair of claim 1 wherein the pivot limiting guide is formed in the seat shell, and wherein the swivel disc is formed from steel and the swivel disc includes a concave upper surface and a convex lower surface.

6. The lounge chair of claim 1 further comprising a plurality of glide buttons received in the base and each extending from the bottom contact surface.

7. The lounge chair of claim 6 wherein each of the glide buttons is formed from UHMW polyethylene.

8. The lounge chair of claim 6 wherein the swivel disc slides along the glide buttons during pivoting movement of the seat shell.

9. The lounge chair of claim 1 further comprising a retaining disc positioned in the open interior of the seat shell and secured to the pivot post.

10. A lounge chair, comprising:

a seat shell having a hollow interior, integrally formed seat and chair back and a convex bottom contact surface;

a base having a concave support surface that generally corresponds to the convex bottom contact surface of the seat shell;

a pivot post extending from the support surface of the base and into the hollow interior of the seat shell when the seat shell is received on the base;

a swivel disc positioned between the bottom contact surface of the seat shell and the support surface of the base; and

a pivot limiting guide formed in the seat shell, wherein the pivot limiting guide contacts the pivot post to limit the pivoting movement of the seat shell relative to the base; and

a bias member positioned between the seat shell and the base to bias the seat shell into a seating position.

11. The lounge chair of claim 10 wherein the bias member is connected between the seat shell and the pivot post.

12. The lounge chair of claim 11 wherein the bias member is formed from a resilient material.

13. The lounge chair of claim 10 wherein the bias member is a tether.

14. The lounge chair of claim 10 wherein the bias member is a spring.

15. The lounge chair of claim 10 further comprising a plurality of glide buttons received in the base and each extending from the bottom contact surface, wherein the swivel disc includes a concave upper surface and a convex lower surface, and wherein the swivel disc slides along the glide buttons during pivoting movement of the seat shell.

16. The lounge chair of claim 10 further comprising a retaining disc positioned in the open interior of the seat shell and secured to the pivot post.

17. A lounge chair, comprising:

a seat shell having a convex bottom contact surface;

a base having a concave curved support surface that generally corresponds to the convex bottom surface of the seat shell;

a pivot post extending from the support surface of the base, wherein contact between the pivot post and a pivot limiting opening formed in the contact surface of the seat shell limits the pivoting movement of the seat shell relative to the base;

a swivel disc positioned between the bottom contact surface of the seat shell and the support surface of the base; and

a bias member positioned between the seat shell and the base to bias the seat shell to a seating position.

18. The lounge chair of claim 17 wherein the bias member is a tether formed from a resilient material and is connected between the seat shell and the pivot post.

19. The lounge chair of claim 17 wherein the bias member is a spring connected between the seat shell and the pivot post.

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